

# Wildland Fire Management Plan for the Rocky Flats Site

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U.S. DEPARTMENT OF  
**ENERGY**

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## Acronyms and Abbreviations

AEA	Atomic Energy Act
CAD/ROD	Corrective Action Decision/Record of Decision
CDPHE	Colorado Department of Public Health and Environment
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (42 USC 9601, <i>et seq.</i> )
COU	Central Operable Unit
DOE	U.S. Department of Energy
EMS	Environmental Management System
EPA	U.S. Environmental Protection Agency
FMP	Fire Management Plan
ISMS	Integrated Safety Management System
LM	Legacy Management
NFPA	National Fire Protection Association
OU	Operable Unit
POU	Peripheral Operable Unit
RCRA	Resource Conservation and Recovery Act (42 USC 6901, <i>et seq.</i> )
RFCA	Rocky Flats Cleanup Agreement
RFLMA	Rocky Flats Legacy Management Agreement
RFSOG	Rocky Flats Site Operations Guide
USFWS	U.S. Fish and Wildlife Service

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## **Executive Summary**

The U.S. Department of Energy's (DOE's) Rocky Flats Site (Rocky Flats), is located northwest of Denver, Colorado. The DOE Office of Legacy Management (LM) is responsible for management, monitoring, and maintenance activities at the Site. This Wildland Fire Management Plan presents DOE-LM's approach to dealing with natural fires, human-caused accidental fires, and prescribed fires in the Central Operable Unit (COU) at the Site. (Fires occurring within the surrounding Refuge are the responsibility of the U.S. Fish and Wildlife Service. Fires occurring within the permitted mining claims are the responsibility of the permit operator.) This document describes current conditions at the COU, measures taken to prevent fires from occurring, and the fire suppression contract currently in place with a local fire district.

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## 1.0 Introduction and Purpose

The U.S. Department of Energy's (DOE's) Rocky Flats Site (Rocky Flats), which is located approximately 16 miles northwest of Denver, Colorado, was listed on the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) National Priorities List in 1989. Figure 1 provides the site location. The DOE Office of Legacy Management (LM) is responsible for implementing the final response action selected in the *Final Corrective Action Decision/Record of Decision* (CAD/ROD) (DOE 2006) issued September 29, 2006, for Rocky Flats. Prior to the CAD/ROD, cleanup and closure activities were completed in accordance with the requirements of the *Rocky Flats Cleanup Agreement* (RFCA) (CDPHE et al. 1996).

Under the CAD/ROD, two Operable Units (OUs) were established within the boundaries of the Rocky Flats property: the Peripheral OU (POU) and the Central OU (COU) (Figure 2). The COU consolidates areas of the site that require additional remedial/corrective actions, while also considering practicalities of future land management. The POU includes the remaining, generally unimpacted portions of the site and surrounds the COU. The response action in the Final CAD/ROD is no action for the POU and institutional and physical controls with continued monitoring for the COU.

On July 12, 2007, most of the property outside the COU was transferred to the U.S. Department of the Interior for establishment of a National Wildlife Refuge managed by the U.S. Fish and Wildlife Service (USFWS). The U.S. Environmental Protection Agency (EPA) certified that cleanup and closure of Rocky Flats was complete and the COU remedy was operating properly and successfully, in accordance with requirements for DOE to transfer land not required for remedy implementation to USFWS for establishing the Refuge. DOE retained jurisdiction over the active permitted mining claims on the west edge of the POU; however, operations in these areas are the responsibilities of the permit operators. DOE retained the COU and is responsible for implementing the CAD/ROD final response action and ensuring that it remains protective of human health and the environment. The monitoring, surveillance, and maintenance activities for which quarterly, annual, and 5-year review reports are issued are included in the *Rocky Flats Legacy Management Agreement* (RFLMA).

The RFLMA, signed on March 14, 2007, superseded RFCA. RFLMA is a Federal Facility Agreement and Consent Order under CERCLA, the Resource Conservation and Recovery Act (RCRA), and the Colorado Hazardous Waste Act, among DOE, EPA Region 8, and the Colorado Department of Public Health and Environment (CDPHE). The purpose of RFLMA is to establish the regulatory framework for Attachment 2, "Legacy Management Requirements."

The *Rocky Flats Site Operations Guide* (RFSOG) was prepared by DOE-LM as a document to guide work at the COU. The RFSOG provides details on the surveillance and maintenance needed to satisfy the requirements of the CAD/ROD as well as best management practices at the site. As a "desktop procedure," the RFSOG explains how DOE will fulfill its long-term surveillance and maintenance obligations at the COU.

This Wildland Fire Management Plan (FMP) describes the current fire environment at the COU and the fire prevention and mitigation approach. The site currently contracts with a local fire district for firefighting and related activities. This agreement is described, along with other informal agreements in place for additional firefighting assistance.

DOE Order 450.1, *Environmental Protection Program*, requires all DOE elements to incorporate an Environmental Management System (EMS) approach into their Integrated Safety Management Systems (ISMSs) (DOE Policy 450.0). DOE Order 450.1 defines an EMS as a continuing cycle of planning, implementing, evaluating, and improving processes and actions undertaken to achieve environmental goals. The Order also mandates the inclusion of policies, procedures, and training to identify activities with significant environmental impacts in the EMS, as well as methods for managing, controlling, and mitigating the impacts of these activities.

The Order specifically states that the protection of resources from wildland and operational fires should be considered (DOE Order 450.1 § b[1][e]). In addition, a February 24, 2003, memorandum, “Department of Energy (DOE) Wildfire Management Policy,” from the Secretary of Energy to the Under Secretary for Energy, Science and Environment and the Administrator of the National Nuclear Security Administration directed each Program Secretarial Officer to ensure that sites have wildland fire management plans in place that are consistent with the *2001 Federal Wildland Fire Management Policy and Implementing Actions*.

In addition, DOE Order 420.1A, *Facility Safety*, requires compliance to Codes and Standards of the National Fire Protection Association (NFPA), including NFPA Standard 1143, *Wildland Fire Management*, and NFPA Standard 1144, *Protection of Life and Property from Wildfire*.

## **2.0 Background**

### **2.1 Rocky Flats History**

Beginning in 1951, DOE and its predecessor agencies and contractors managed and operated Rocky Flats under authorization of the Atomic Energy Act (AEA). Rocky Flats was part of the United States’ nationwide nuclear weapons complex to manufacture nuclear weapons components from various radioactive, hazardous, and nonhazardous materials. Other support activities included chemical recovery and purification of recyclable transuranic radionuclides (i.e., plutonium, which is a “special nuclear material” under the AEA) and research and development in metallurgy, machining, nondestructive testing, coatings, remote engineering, chemistry, and physics. Manufacturing activities, accidental industrial fires and spills, and support activities, including waste management resulted in the release of hazardous substances, hazardous wastes, and hazardous waste constituents to air, soil, sediment, groundwater, and surface water at Rocky Flats.

The majority of Rocky Flats structures were located within an approximately 300-acre industrialized area (currently located within the COU) at the center of the approximately 6,220-acre property. The Industrial Area was surrounded by the security Buffer Zone (currently referred to as the POU), which contained some supporting activities, such as waste disposal, but was left mostly undisturbed.



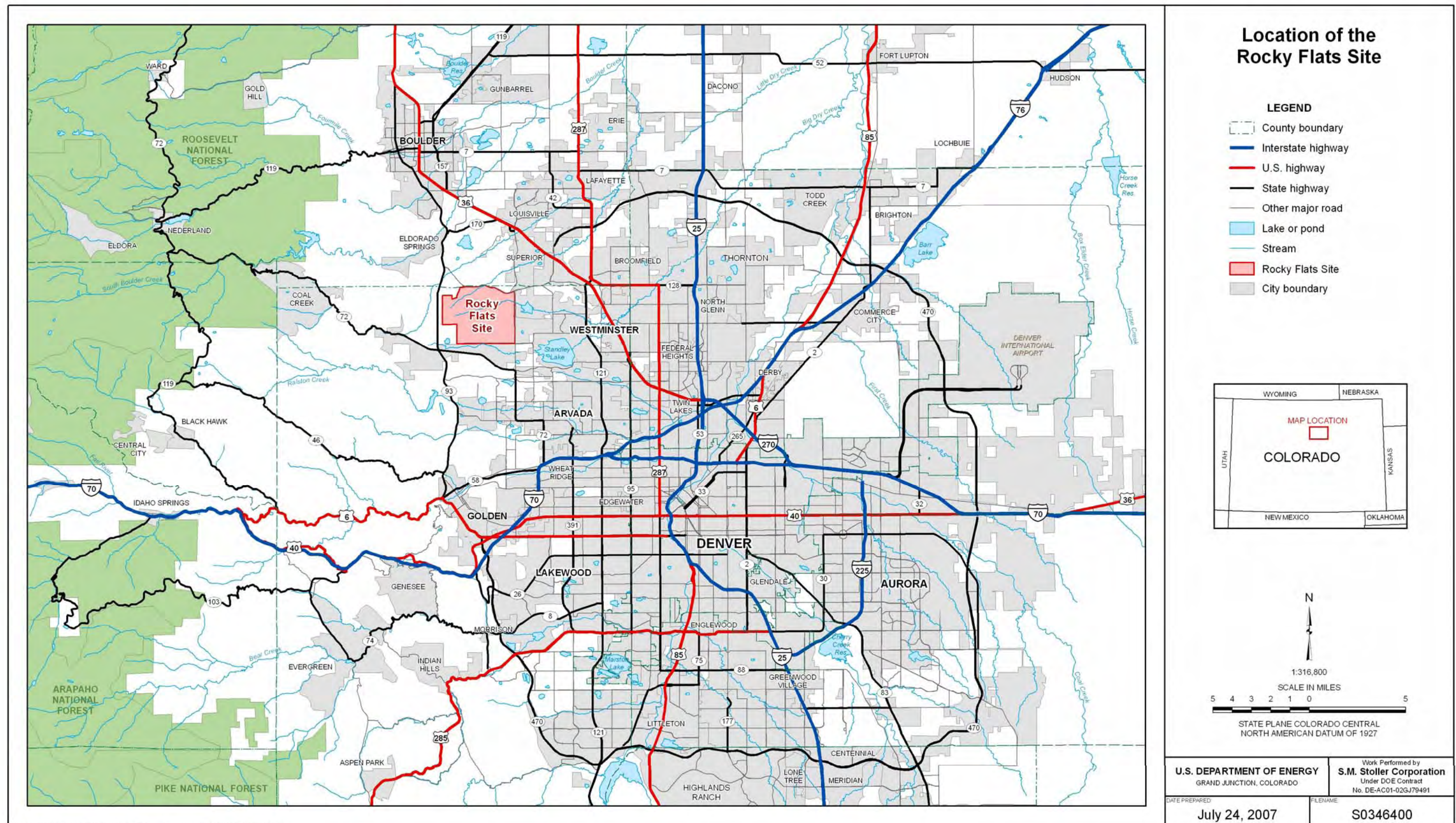


Figure 1. Location of the Rocky Flats Site



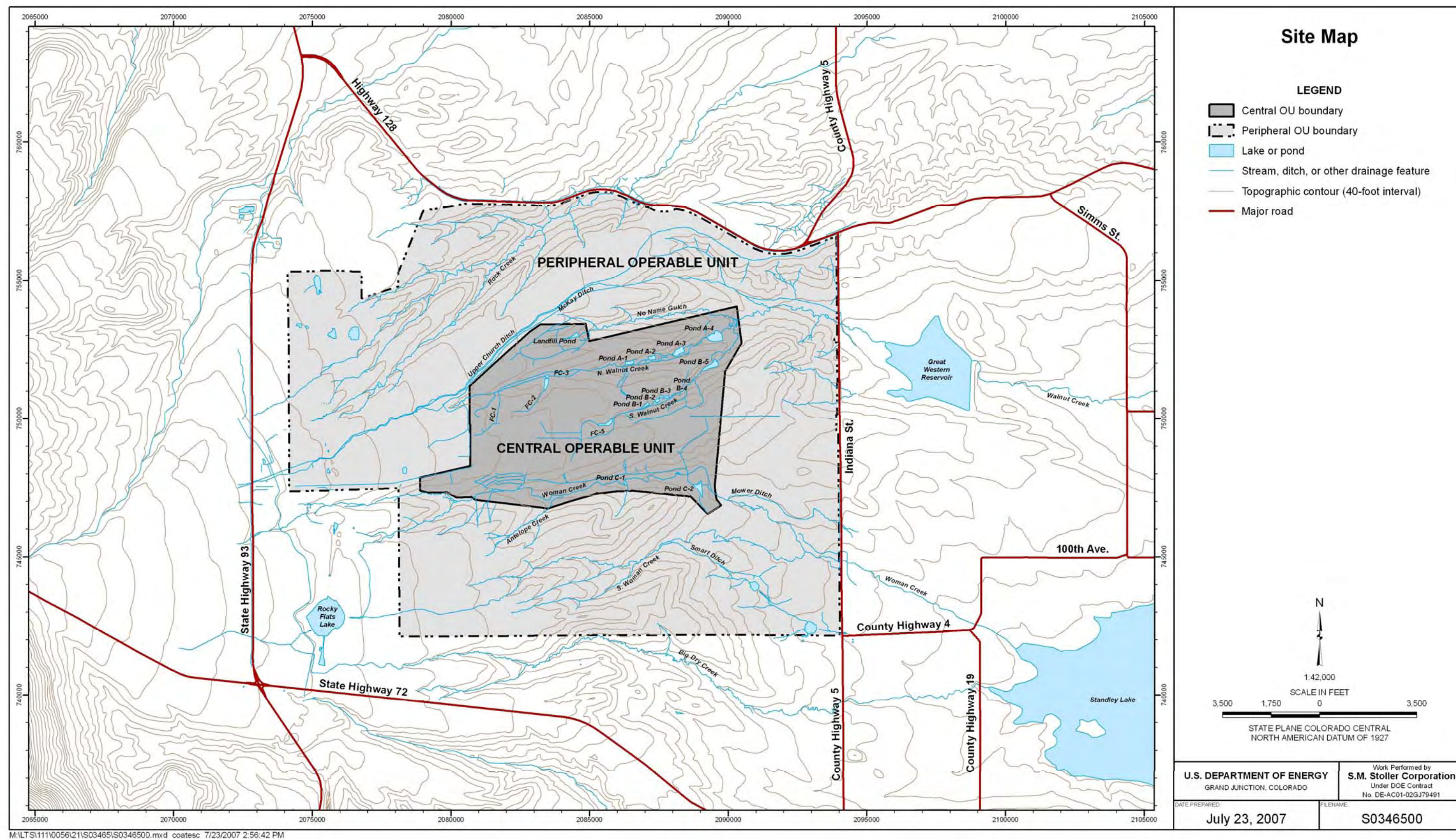


Figure 2. Site Map



Investigation and cleanup of released hazardous substances, including hazardous wastes, began in the 1980s. Beginning in 1992, when weapons components production halted, the Rocky Flats mission included the safe storage and shipment of special nuclear material, nuclear deactivation and decommissioning, waste management and shipment, environmental investigations, cleanup, and site closure.

All planned cleanup actions have been completed and much of the POU portion of the Site has been transitioned to the Rocky Flats National Wildlife Refuge. Potential future users of the wildlife refuge include wildlife refuge workers and visitors.

## **2.2 Land and Resource Use**

Until recently, land around Rocky Flats consisted primarily of rangeland, preserved open space, mining areas, and low-density residential areas. However, this rural pattern began to change in the 1990's due to the spread of development from surrounding communities. The towns of Superior, Broomfield, and Arvada have already experienced extensive development north, northeast, and southeast of Rocky Flats.

State-owned lands southwest and west of Rocky Flats are used for grazing, mining, and storage and conveyance of municipal water supplies. Along Highway 93, an area of land approximately 1,200 feet wide adjacent to the Rocky Flats western boundary is available for eventual development, open space, or highway right-of-way. The 259-acre DOE National Wind Technology Center is located adjacent to the northwestern corner of the POU. Preserved open space is the primary existing and proposed use of the lands immediately north (Boulder County and City of Boulder) and east (cities of Broomfield and Westminster) of the POU.

Areas within the POU and adjacent privately owned lands west of Rocky Flats have been permitted by the State of Colorado and Jefferson County for mineral extraction (primarily clay, sand, and gravel mining). Several cattle and horse operations and small hay fields lie to the south. However, a mixed-use residential and commercial development known as Vauxmont, within the City of Arvada, is proposed for an area immediately adjacent to the southern boundary of Rocky Flats Refuge lands. By 2020, the Denver Regional Council of Governments projects that the entire area south of the Rocky Flats Refuge will be developed, as well as areas to the southeast that are either not already developed or protected as open space (by the City of Westminster) around Standley Lake.

Rocky Flats is the property of the United States, with activities within the COU administered by DOE. Rocky Flats is currently closed to public access; however, per the Refuge Act, jurisdiction for the majority of the Site (generally the POU) was transferred to USFWS in July 2007 for the purpose of establishing the Rocky Flats National Wildlife Refuge.

Specific prohibitions related to activities on lands to be retained by DOE for implementation of the remedy (i.e., the COU) are included in the CAD/ROD remedy as institutional controls. DOE is required to implement administrative procedures to control modification, maintenance, or other activities requiring excavation within the COU to prevent violation of the restrictions listed in RFLMA Attachment 2. DOE must also ensure that such activities will not compromise the integrity or function of the remedy or result in uncontrolled releases of or exposures to subsurface contamination, in accordance with the land-use restrictions in RFLMA Attachment 2.

In addition, DOE must implement work control procedures to help maintain the use restrictions and ensure protection of the integrity of the institutional controls. These procedures are derived from EPA and State of Colorado regulation and guidance as well as DOE Orders and guidance. The DOE ISMS utilizes processes such as the job hazard analysis to identify and mediate environmental, health, and safety risks to ensure work is performed in a safe and environmentally protective manner.

## 2.3 Natural and Historical Role of Fire

Historical documentation indicates grasslands in the vicinity of the Rocky Flats area have been subjected to lightning- and human-caused fires for thousands of years (DOE 1999). These fires likely played a major role in promoting native vegetation growth and diversity. Since 1972, wildfires have not been allowed to burn, and only one controlled burn has been conducted in the grasslands at Rocky Flats. As a result, a fuel load of dead vegetation has been building in the grasslands at the site for at least 30 years. Ten wildfires have been documented on the site since 1993. In addition, a prescribed burn was conducted on April 6, 2000. These grassland fires are summarized in Table 1.

*Table 1. Wildfires/Prescribed Burns Documented at Rocky Flats Since 1993*

Date	Wildfire or Prescribed Burn?	Name	Location	Acres
1993	Wildfire	1993 Wildfire	South BZ, SE of C-1 Pond	0.14
3/20/94	Wildfire	1994 WildFire	North BZ, S of Hwy 128	70.17
9/2/96	Wildfire	September 2, 1996 Wildfire	South BZ, contained by BZ roads	104.07
7/10/00	Wildfire	July 10, 2000 Wildfire	South BZ, S of East Gate	8.43
9/10/00	Wildfire	September 10, 2000 Wildfire	North BZ, S of Hwy 128	0.52
4/6/00	Prescribed Burn	April 6, 2000 Prescribed Burn	South BZ, contained by BZ roads	48.00
6/26/01	Wildfire	June 26, 2001 Wildfire	South BZ, along ridgetop road	0.0042
7/4/01	Wildfire	July 4, 2001 Wildfire	North BZ, SE of NREL	0.99
2/24/02	Wildfire	February 24, 2002 Wildfire	North BZ, S of Hwy 128	26.60
8/26/05	Wildfire	August 26, 2005 OLF Wildfire	South IA, OLF	4.01
4/2/06	Wildfire	April 2, 2006 Wildfire	NE BZ, S of Hwy 128, W of Indiana St.	852.00
<b>Total</b>				<b>1,114.9</b>

## 3.0 Current Fire Environment and Mitigation Approach

### 3.1 Wildfire Seasons

The wildfire season along the Front Range, which includes Rocky Flats, typically runs from May 1 through the end of October, with June through August as the critical months.



## **3.2 Fuels at the Site**

As stated above, since 1972, wildfires have not been allowed to burn, and only one controlled burn has been conducted in the grasslands at Rocky Flats. As a result, a fuel load of dead vegetation has been accumulating in the grasslands at the site for at least 30 years.

The grasslands at the COU are characterized by tall- and mid-grass species such as big bluestem, little bluestem, Indian grass, blue grama, western wheatgrass, needle-and-thread, and prairie Junegrass, in addition to common reclamation grasses such as smooth brome and intermediate wheatgrass. These grasses are adapted to the relatively frequent disturbance of fire and benefit from fast moving, “cool” fire, as it will remove excessive dried biomass and add nutrients to the soil. When the accumulation of thatch and the encroachment of brush increases fuel loads, high-intensity fires may have damaging effects. This may include the reduction of grass cover, increased erosion, or encroachment of non-native species. The COU area consists primarily of grassland, with riparian woodland/shrubland along the streams in the bottoms of the drainages. The riparian areas are dominated by scattered plains cottonwood and peachleaf willow trees, coyote willow, and wild indigo shrubs. Due to the narrow nature of the riparian woodland/shrubland areas, they are not considered a major fuel load source. A few small patches of planted landscaping trees (ponderosa pine, Rocky Mountain juniper, and blue spruce) remain scattered throughout the former Industrial Area. These are not considered a major fuel load source.

Fire return intervals (i.e., the number of years between two successive fires at a given location) for these types of grasslands range from approximately 10 to 35 years, allowing for a rapid departure from the historic fire regime conditions when fire is excluded. Although brush and timber fires are known for more intense fire behavior than grass fuels, the potential impact of grass fires should not be overestimated. These light, flashy fuels can be resistant to suppression, producing rapid rates of spread and flame lengths in excess of 10 feet. They can pose a risk to firefighter safety and a threat to property.

In addition to the vegetation fuels present at the Site, the East Shed contains gasoline and other flammable liquids.

## **3.3 Special Hazards**

No special hazards exist at the COU. Any residual radiological contamination associated with activities conducted at Rocky Flats is buried beneath at least 3 feet of clean soil.

## **3.4 Mitigation**

Wildfire behavior and severity are dictated by fuel type, weather conditions, and terrain. Given that fuel is the only variable of these that can be practically managed, it is the focus of many mitigation efforts. The objective of fuels management may include reducing surface fire intensity, reducing the likelihood of crown fire initiation, and improving wildland health. In grassland communities, these objectives may be accomplished by reducing surface fuels through mowing, grazing, or prescribed burning. Fuel breaks may also be used to break up larger areas into smaller defendable units. These are strategically located areas where fuels have been reduced in a prescribed manner, often along roads. In the COU, although roads exist that may

serve as firebreaks, they are not maintained or managed for this purpose. These fuel breaks may be associated with or tapered into larger area treatments.

Improperly implemented fuel treatments can have negative impacts in terms of ecosystem health and fire behavior. Mowing or prescribed fire improperly applied in grasslands can degrade the health of indigenous species and create openings for invasive species. Some brush species respond to mechanical treatment with vigorous resprouting unless combined with additional cuttings, prescribed fire, or chemical treatment. The overall benefits of properly conducted mitigation treatments are, however, well documented.

The current mitigation strategy at Rocky Flats incorporates:

- Selected mowing (primarily for weed control rather than for fire mitigation)
- Requiring projects to have refueling plans and procedures that minimize fire potential
- Controlling personnel activities such as smoking or parking in areas of tall vegetation that have potential to cause fire
- Requiring hot work permits for construction or maintenance activities that require heat or an open flame

Prescribed fire or grazing may be considered in the future as management tools; however, neither are planned for use in the near term. Future use of prescribed fire would require the appropriate wildland fire planning, permits, and approvals prior to implementation

### **3.5 Collaboration with Outside Agencies**

DOE-LM consults with the Rocky Mountain Fire District and USFWS on a routine basis regarding the Site fire status. In addition to the fire suppression contract with the Rocky Mountain Fire District, DOE has an informal agreement with USFWS which has agreed to respond to a range fire on the COU assuming staff and resources are available. USFWS administers the Rocky Flats National Wildlife Refuge that surrounds the COU and will respond to fires on Refuge lands.

## **4.0 Response to Fires at the Site**

The current fire response at Rocky Flats is one of suppression. The Rocky Mountain Fire District is currently under contract to provide firefighting, rescue, hazardous materials, and Advanced Life Support emergency response to the Site. With respect to firefighting, the Fire District will completely extinguish and overhaul all fires in the COU. Neither the Rocky Flats Site, nor its personnel have firefighting capability.

Prescribed fire, which is a tool to accomplish resource management objectives such as hazardous fuels reduction, plant species diversity, and noxious weed abatement, is not currently used at Rocky Flats. Any future use of prescribed fire would require the appropriate wildland fire planning, permits, and approvals prior to implementation.

## **4.1 Initial Response**

In accordance with terms of the current contract with the Rocky Mountain Fire District, the District will arrive at the site Access Road and State Highway 93 within 20 minutes of dispatch by a Public Service Answering Point, with an equipped vehicle and qualified crew (three personnel minimum on a Class A pumper) appropriate to mitigate the event as reported. This time is considered from the home station of the apparatus and assumes road conditions are unimpeded by severe weather conditions or unanticipated road closures/blockages. It also assumes an area disaster-type incident has not stressed local first responder resources. Anticipated conditions such as normal rush hour traffic are encompassed within the 20 minutes. This time does not apply to backup units, additional alarm units, or specialty apparatus such as boats, heavy rescue vehicles, and HAZMAT vehicles; the latter three being in addition to a 20-minute criteria first responder vehicle.

There is no assurance that federal or contracted employees will be on site at the initiation or early stage of emergencies to provide information or assistance. Typical work activities at the site include servicing air, surface, and groundwater monitoring stations; fence maintenance; erosion and weed control; revegetation; ecological monitoring; and similar activities. Visitor volume at the site is projected to be low. Surface mining of aggregates may be in progress along the north side of the Access Road. Such activity is by private commercial interests exercising mineral rights on Rocky Flats.

A USFWS gate approximately 0.25 mile east of State Highway 93 allows primary road access to the COU. The COU is surrounded by a four-strand barbed wire fence. Gates around the COU perimeter fence are located in five different locations, as shown on Figure 3.

No assured water supply is present at the site. The Fire District is responsible to secure/provide all water necessary for the control/extinguishment of fires. Automatic alarms, hard-wire telephones, or commercial electricity or water services are not available on the site. Overhead electrical high-voltage transmission lines and two buried natural gas transmission lines transit the site.

## **4.2 Resources**

The Rocky Mountain Fire District will have the capability to perform the scope of tasks using in-house resources assuming full availability conditions. When a site incident or area emergency situations have stressed in-house resources, the utilization of mutual-aid or other backup/fill-in agreements to provide timely response or assistance is appropriate. Subcontractor membership in regional consortiums such as HAZMAT and Technical Rescue Teams is considered in-house resources.

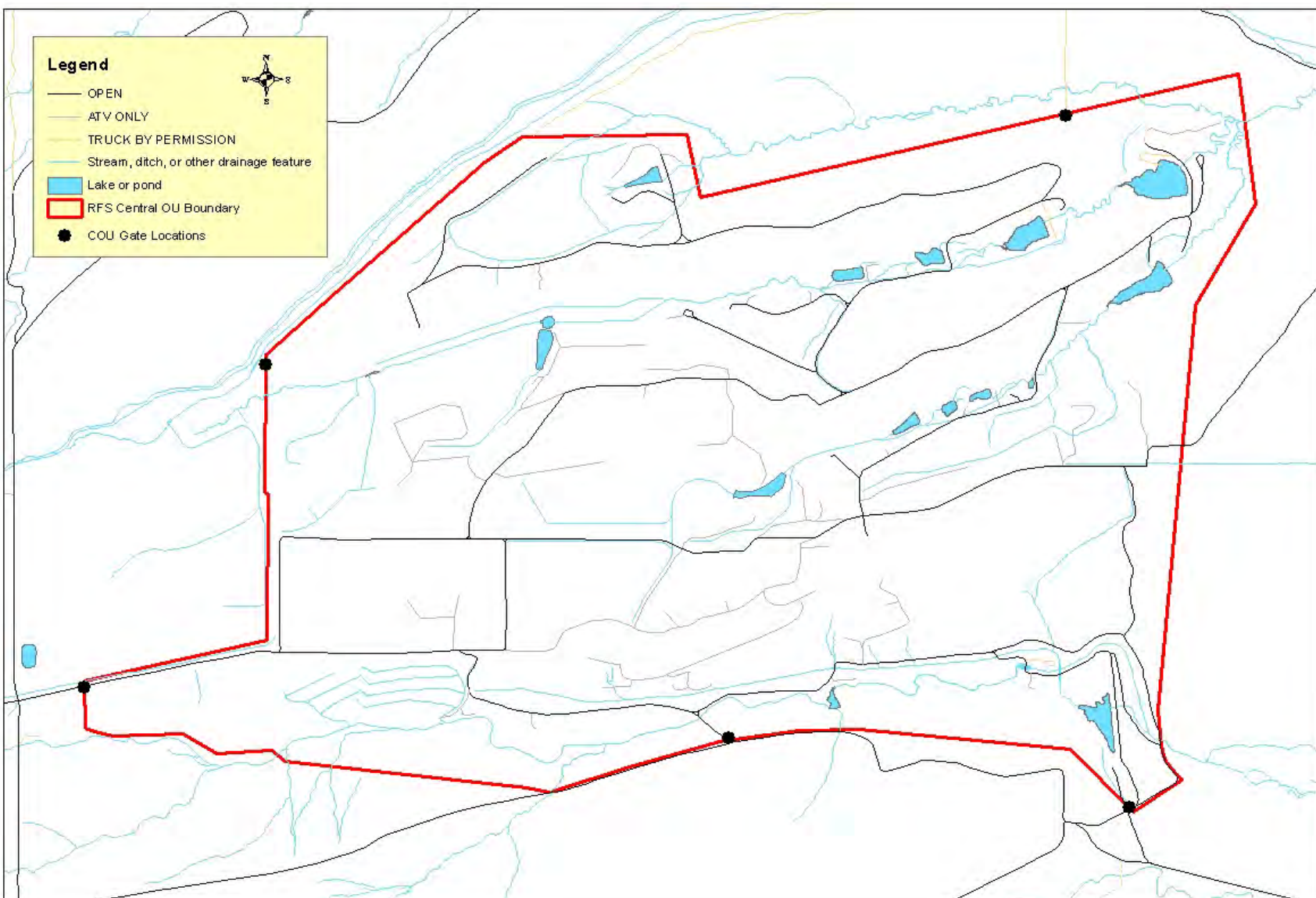


Figure 3. COU Gate Locations Map

### 4.3 Incident Reports

The Rocky Mountain Fire District will submit an Incident Summary Report within seven business days of each response to the site. The report will provide a brief description of the incident, apparatus used, actions taken, times for dispatch and significant occurrences, and injuries/deaths.

LMS incident reporting is required in accordance with LMS procedures and timelines. Certain types of incidents must be reported and classified within 2 hours.

## 5.0 Summary

The current fire management situation at the COU involves suppressing all wildland fires. DOE-LM currently contracts with the Rocky Mountain Fire District to provide firefighting support. This FMP will be revised when conditions change.

## 6.0 References

CDPHE, DOE, and EPA (Colorado Department of Public Health and Environment, U.S. Department of Energy, and U.S. Environmental Protection Agency), 1996. *Final Rocky Flats Cleanup Agreement*, Federal Facility Agreement and Consent Order, CERCLA VIII-96-21 RCRA (3008(h)) VIII-96-01, State of Colorado Docket #96-07-19-01.

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